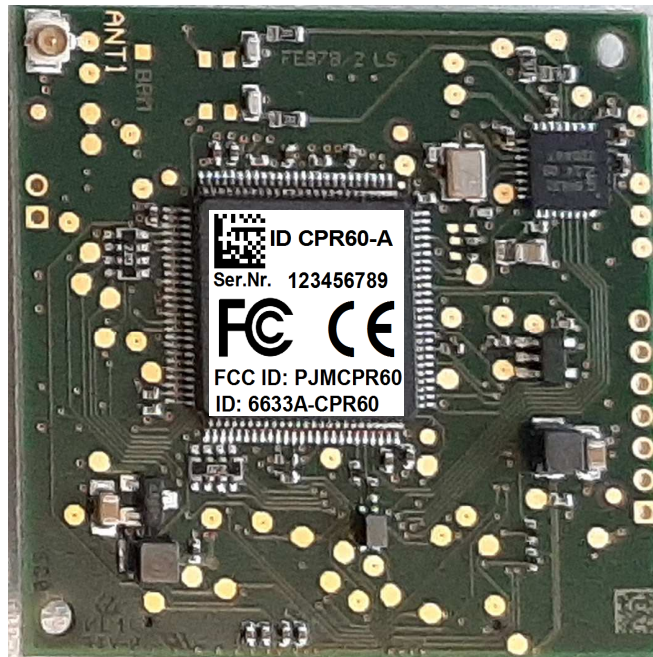




# ID CPR60

## RFID Reader Module



Modell	Artikel Nr.
ID CPR60-A	5491.000.00



## Note

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**1. Safety Instructions / Warning - Read before start-up !**

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- The device may only be used for the intended purpose designed by for the manufacturer.
- The operation manual should be conveniently kept available at all times for each user.
- Unauthorised changes and the use of spare parts and additional devices which have not been sold or recommended by the manufacturer may cause fire, electric shocks or injuries. Such unauthorised measures shall exclude any liability by the manufacturer.
- The liability-prescriptions of the manufacturer in the issue valid at the time of purchase are valid for the device. The manufacturer shall not be held legally responsible for inaccuracies, errors, or omissions in the manual or automatically set parameters for a device or for an incorrect application of a device.
- Repairs may only be executed by the manufacturer.
- Installation, operation, and maintenance procedures should only be carried out by qualified personnel.
- Use of the device and its installation must be in accordance with national legal requirements and local electrical codes .
- When working on devices the valid safety regulations must be observed.
- The reader module is a limited module. The HF Reader IC has no internal shielding. The module is designed for installation in electronic devices. (e.g. printers, terminals, hand scanners, etc.) Care must be taken to ensure that no switching power supply, oscillator or high current lines are routed directly along the module. Or located under the module. Only the antennas, mentioned in the manual, may be used. The cable length to the antenna is limited to 1m. Take care that the PCB design in the host environment is EMC compliant.
- Special advice for carriers of cardiac pacemakers:  
Although this device doesn't exceed the valid limits for electromagnetic fields you should keep a minimum distance of 25 cm between the external antenna and your cardiac pacemaker and not stay in an immediate proximity of the device respective the antenna for some time.

## 2. Characterization ID CPR60

The ID CPR60 is a RFID reader which supports ISO/IEC 14443 A/B and ISO 15693 contactless smart cards and transponders. It also offers 4 interfaces to connect ISO 7816 smart cards with contacts.

Three different antennas, can be connected can be connected to the 50 Ohm antenna output. The antennas have different dimensions: Antenna No. 1 ID ISC.ANT100/100 with 100x100mm, Antenna No. 2 ID ISC.ANT40/30 and Antenna No. 3 RFID Antenna Board 445-100302 with 30x30mm.

Optional the RFID interface can support the contactless standards ISO18000-1 mode 3, NFC P2P passive initiator mode in accordance with ISO/IEC 18092 and JIS X 6319-4 (comparable with FeliCa). This support is available on request only.

For host communication ID CPR60 offers an USB device full speed interface, a RS232-LVTTL interface (COM Interface) and a SPI interface. For data transfer with a host computer the ISO-host mode (polling) is available via the USB, COM and SPI interface.

The functionality of the ID CPR60 is based on the well known ID CPR-family, like the reader module ID CPR74 or the wall-mount reader ID CPR50.10 and is compatible with them mainly.

The use of ISO-host commands guarantees an easy creation of user software as well as the compatibility with all other FEIG RFID readers.

Beside the CPRStart software for demonstration and configuration of the reader capabilities and the Firmware Update Tool a lot of different Software Development Kits (SDK) and drivers are available to support an easy integration into the customer's application.

### 2.1. Available Accessories

Tab. 1 Available Accessories and spare parts

Part Number	Part name	Description
5604.000.00	ID CPR60-DevBoard	Development Board for the ID CPR60 incl. Power Supply with European plug
3674.000.00	ID ISC.ANT40/30-U.FL-A	50 Ohm Antenna with U.FL-connector for the connection to the ID CPR60 Dimensions: 40 mm x 30 mm
3673.000.00	ID ISC.ANT100/100-U.FL-A	50 Ohm Antenna with U.FL-connector for the connection to the ID CPR60 Dimensions: 100 mm x 100 mm
3540.000.00	RFID Antenna Board 445-100302	50 Ohm Antenna with U.FL-connector for the connection to the ID CPR60 Dimensions: 30 mm x 30 mm

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## 2.2. Available Software Tools, USB Driver and Firmware

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The USB driver and the test and configuration tool “CPRStart” are available on our FEIG download area:

<https://www.feig.de/en/login/>

Username: feig\_Customer

Password :

For firmware updates we are providing the “FirmwareUpdateTool” and a external firmware xml-file.

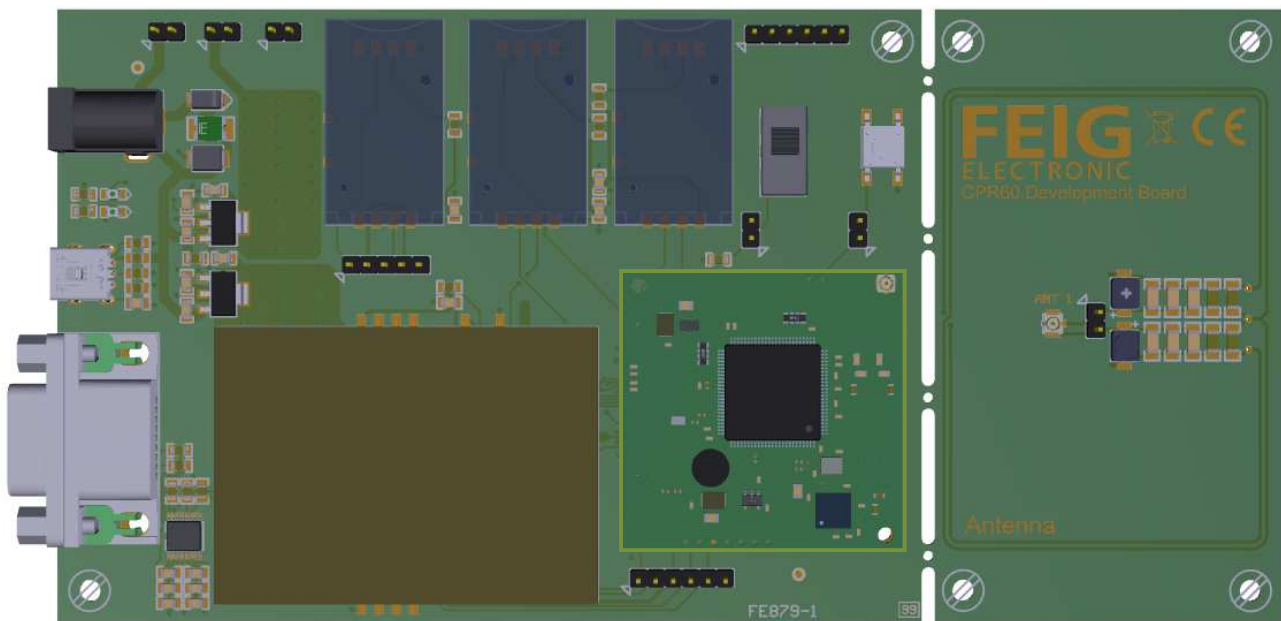
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## 2.3. Development Board

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For demonstration and development purposes a special PCB with connectors, SAM sockets and power supply is available on request.

Description of the Demo Board:



### 3. Dimensions

The ID CPR60 reader module has been designed for the integration into terminals, printers or handheld devices and so on.

Figure 1: Dimension (Top View)

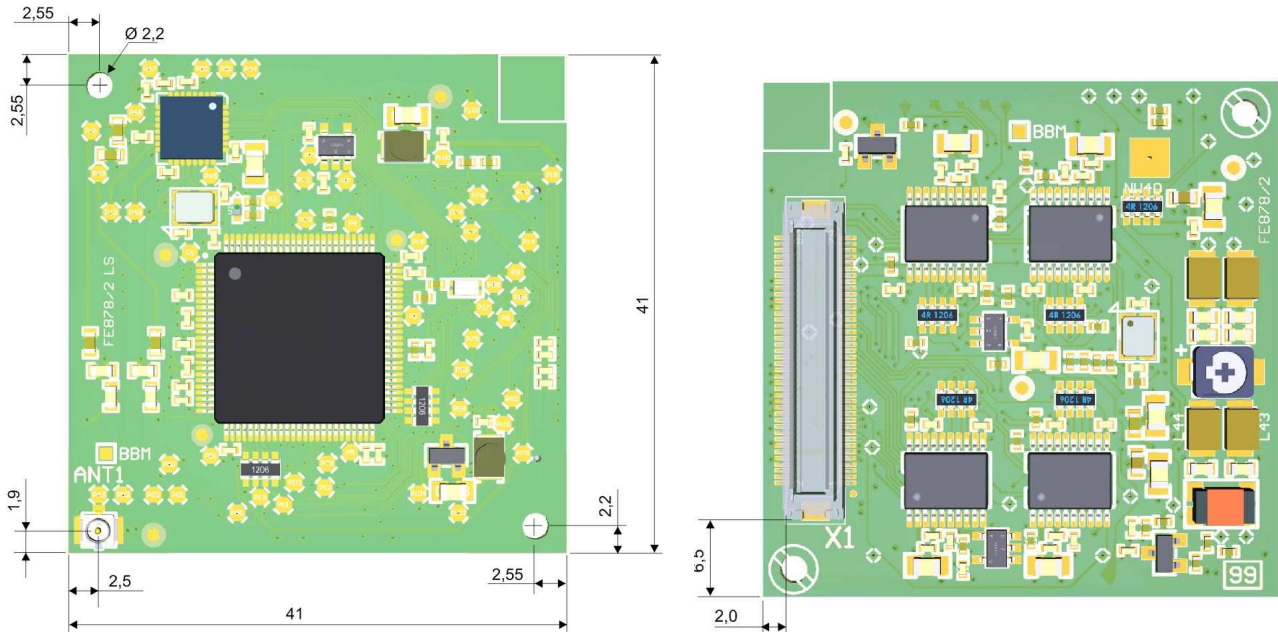
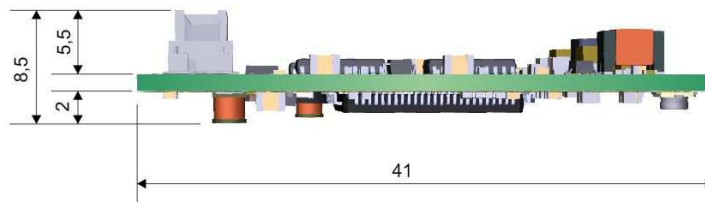


Figure 2: Dimension (Side View)



## 4. Installation and wiring

### 4.1. Connector X1

X1 (Connector Type: Hirose DF17(2.5)-80DP-0.5V(57)) is the main connector for power supply, interfaces and control signals. The following table shows the pin-assignment of the connector. Interfaces and functions are described from the ID CPR60 view (an input must be connected to one output or vice versa).

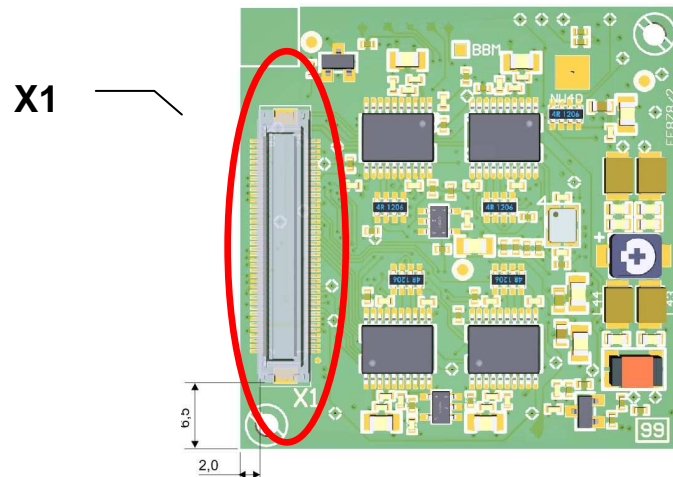


Figure 3: Connector X1

At connector X1 four external smart card connectors can be connected. SAM1, SAM2, SAM3 and KCC whereas only KCC supports a card presence signal, which also can be used to awake the CPR60 from standby mode (see: [5. Standby / Low Power Card Detection](#)).

PIN	Function	Remark	PIN	Function	Remark
1	n.c.		2	n.c.	
3	n.c.		4	n.c.	
5	n.c.		6	n.c.	
7	n.c.		8	n.c.	
9	GND		10	GND	
11	3,3 V DC Supply		12	3,3 V DC Supply	
13	3,3 V DC Supply		14	GND	
15	SAM3_CLK		16	n.c.	
17	KCC_CLK (SAM4)		18	n.c.	
19	SAM1_I/O		20	n.c.	
21	SAM2_I/O		22	n.c.	
23	SAM3_I/O		24	n.c.	
25	KCC_I/O (SAM4)		26	SAM1_VCC	
27	n.c.		28	SAM2_VCC	
29	n.c.		30	SAM3_VCC	



PIN	Function	Remark	PIN	Function	Remark
31	n.c.		32	GND	
33	n.c.		34	KCC_VCC (SAM 4)	
35	GND		36	SAM1_CLK	
37	SPI_MISO*	CPR60 is Slave	38	SAM2_CLK	
39	SPI_MOSI*	CPR60 is Slave	40	USB DP*	
41	SPI_nCS**	CPR60 Input	42	USB DM*	
43	SPI_CLK**	CPR60 Input	44	n.c.	
45	n.c.		46	n.c.	
47	SAM1_RST		48	n.c.	
49	SAM2_RST		50	nKCC_DET (SAM 4)	Smartcard present connector input  0: Card preset 1: Card no present
51	SAM3_RST		52	nLOW_PWR	Control input for low power card detection  0: low power mod low 1: normal mode
53	KCC_RST (SAM 4)		54	n.c.	
55	GND		56	n.c.	
57	n.c.		58	GND	
59	n.c.		60	5 V DC Supply	
61	n.c.		62	n.c.	
63	n.c.		64	nRESET	Reset Input
65	RS232_TxD	reader TxD, host RxD	66	RS232_RxD*	Reader RxD, Host TxD
67	n.c.		68	n.c.	
69	n.c.		70	n.c.	
71	n.c.		72	SPI_INT	IRQ output with double function:  <ul style="list-style-type: none"> <li>• SPI-IRQ</li> <li>• Low power card detection: Card detected</li> </ul>
73	n.c.		74	n.c.	
75	GND		76	GND	
77	n.c.		78	n.c.	
79	n.c.		80	n.c.	

\* 5 V tolerant Input

\*\* 3,3 V tolerant Input

## 4.2. Connector ANT

The ID CPR60 module is equipped with an connector for an external 50  $\Omega$ -antenna. The connection of the external antenna is possible via the U.FL connector „ANT“.

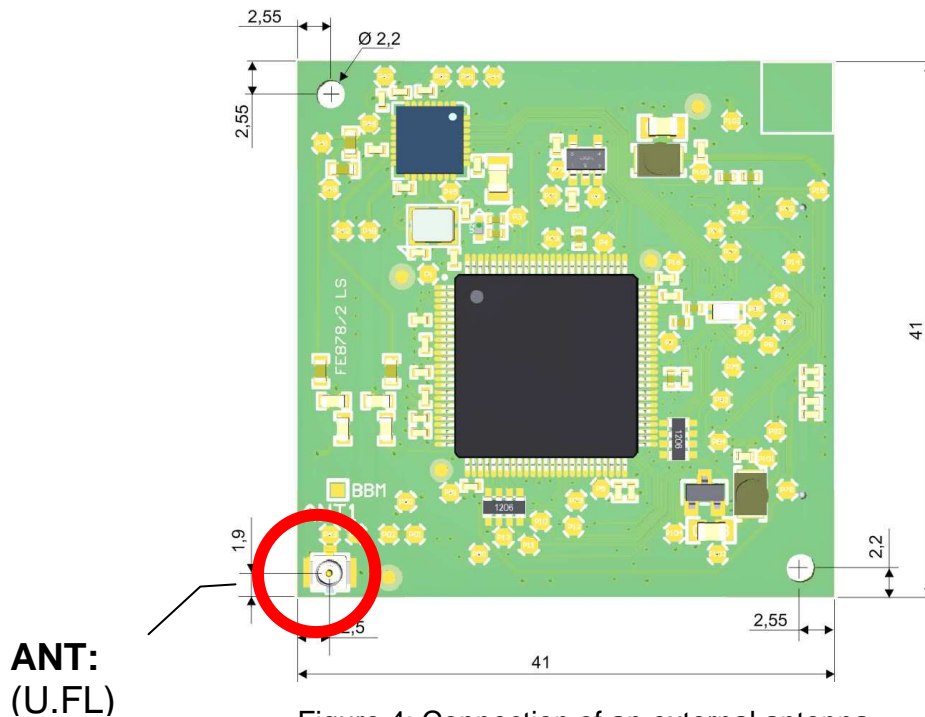


Figure 4: Connection of an external antenna

### NOTICE:

1. Three different antennas can be connected. The antennas have different dimensions.
 

Antenne 1 (100 x 100mm)	ID ISC.ANT100/100
Antenne 2 (40 x 30mm)	ID ISC.ANT40/30
Antenne 3 (30 x 30mm)	RFID Antenna Board 445-100302
2. The antenna output is neither permanent short circuit protected nor permanent no-load protected.
3. A coaxial cable, U.FL-LP-088, is used to connect the antenna. The antenna cable should be no longer than 1m. The use of other cable length are possible after consulting the manufacturer.

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## 5. Standby / Low Power Card Detection

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The ID CPR60 offers a standby mode to reduce the power consumption to a minimum. The standby mode can be controlled by the host via input nLOW\_PWR (see: [4.1. Connector X1](#)).

The standby mode is activated if input nLOW\_PWR is set to low. In this mode the reader wakes up if:

- a contactless card is detected in front of the RFID antenna or
- if the Input nKCC\_DET is set to 0

The reader remains active for a configurable time. Even if nLOW\_PWR is set to high during this time the reader remains active as long as nLOW\_PWR is set to high.

The host can switch the reader at any time back into the standby mode with command [0x64] System Reset.

## 6. Technical Data

Tab. 2: Technical data

		ID CPR60
<b>Dimension (W x H x D)</b>		max. 41 mm x 41 mm x 6,5 mm
<b>Weight</b>		approx. 10 g
<b>Temperature Range</b>	<b>Operating</b>	-25 °C up to +70 °C (-13 °F up to +158 °F)
	<b>Storage</b>	-40 °C up to +85 °C (-40 °F up to +185 °F)
<b>Humidity</b>		max. 95 % (not condensing)
<b>Power Supply<sup>1</sup></b>		<ul style="list-style-type: none"> <li>for digital circuit: 3,3 V DC <math>\pm</math> 5 % max power consumption: 100 mA</li> <li>for analog circuit: 5 V DC <math>\pm</math> 5 % Ripple: 0...250 kHz &lt; 10 mVpp up from 250 kHz &lt; 0,1 mVpp max power consumption peak (excl. SAM): 300 mA typ. power consumption with RFID (excl. SAM): 200 mA</li> </ul>
<b>Current Consumption</b>		< 500 mA (without SAM) < 25mA Standby mode < 50mA Standby Mode with Wake-Up-by-Card
<b>Interfaces</b>	<b>USB</b>	Full-Speed (12 Mbit/s), Self-Powered Device
	<b>SPI</b>	Slave Device (up to 16 Mbit/s)
	<b>RS232-LVTTL</b>	4 800 – 921 600 Baud
<b>Driver</b>		USB Driver, PC/SC-Driver (WHQL) Windows 7, 8 and 10 32/64 Bit Windows Server 2012 and 2016
<b>Connector (Vcc, USB , SPI, Smart Card)</b>		80 pol. (see: <a href="#">4.1. Connector X1</a> )
<b>Software Development Kits</b>		Windows®, Windows® CE and Linux (C++, .NET, JAVA)
<b>RFID Interface</b>		ISO/IEC 14443-A/-B (ISO-Mode: 106, 212, 424, 847 kbit/s; EMVCo Mode: 106 kBit/s) ISO 15693
<b>Operating Frequency</b>		13,56 MHz
<b>Output Power</b>		typ. 450 mW
<b>Antenna Connection</b>		U.FL-Socket
<b>Contact Interface (ISO 7816)</b>		4 SAM card interfaces T=0 and T=1 Protocol, Power Class A, B & C
<b>Operating Modes</b>		ISOHost Mode (Polling Mode)

<sup>1</sup> The device has to be supplied by a limited power supply according IEC EN 60950-1 chapter 2.5, only.

Radio Approval	Europe	EN 300 330
	USA	Available on request
	Canada	Available on request
EMV		EN 301 489
Safety and Health		EN 60950
		EN 50364
Waste and Hazardous Substances		WEEE - 2002/96/EC
		RoHS - 2011/65/EC

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## 7. Approvals

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### 7.1. Europa (CE)

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Hereby, FEIG ELECTRONIC GmbH declares that the radio equipment type ID CPR60 is in compliance with Directive 2014/53/EU.

The full text of the EU declaration of conformity is available at the following internet address:

<http://www.feig.de/en/downloads-support/declarations-of-conformity.html>



Performance Classification according to ETSI EN 301 489: Class 2

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**7.2. USA (FCC) and Canada (IC)**


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<b>Product name:</b>	<b>ID CPR60</b>
<b>FCC ID:</b> <b>IC:</b>	<b>PJMCPR60</b> <b>6633A-CPR60</b>
<b>Notice for USA and Canada</b>	<p>This device complies with Part 15 of the FCC Rules and with RSS-210 of Industry Canada. Operation is subject to the following two conditions. (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Unauthorized modifications may void the authority granted under Federal communications Commission Rules permitting the operation of this device. This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.</p> <p>Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :</p> <p>(1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.</p>

***Warning: Changes or modification made to this equipment not expressly approved by FEIG ELECTRONIC GmbH may void the FCC authorization to operate this equipment.***

**Installation with FCC / IC Approval:**

The reader module was tested according to the standard FCC - Title 47 CFR Part 15 §207, §209 and §225 and the ISED standard RSS 210 Issue 10 and RSS Gen Issue 5 . The module is conform to the listed limits in the standards.

In normal operation the RF exposure is far below the limits of OET Bulletin 65.

This module is approved for installation into fixed and/or mobile host platforms and must not be co-located or operating in conjunction with any other antenna or transmitter except in accordance with FCC/ISED multi-transmitter guidelines. End users must be provided with transmitter operating conditions for satisfying RF Exposure compliance.

The manufacturer is obliged to include a notice "Contains FCC ID: PJMCPR60 an IC: 6633A-CPR60" at the user manual and on the product label.

The manufacturer is obliged to test the terminal device together with the reader module according to the national FCC requirements according to 47 CFR Part15 §209 and §225

For this purpose the reader module must be set to normal operation, ScanMode. The Scan mode is switched with on by SW command: Transparent Command - ISO 14443A [ReqA] HEX: 02 00 0A FF 00 30 02 01

The manufacturer is obliged to test the terminal device together **with** the reader module according to the national FCC requirements according to 47 CFR Part15 §209 and §225 For this purpose the reader module must be set to normal operation, ScanMode. The Scan mode is switched with on by SW command: Transparent Command - ISO 14443A [ReqA] HEX: 02 00 0A FF 00 30 02 01

The manufacturer is obliged to test the terminal equipment **without** RF transmitter, according to the national FCC requirements according to 47 CFR Part 15 Subpart B. For this purpose, the HF transmitter of the reader module must be switched off. The HF transmitter is switched off by the SW command: Transparent Command - HF Off HEX: 02 00 0A FF 00 04 01 00

FCC-/IC-NOTICE: To comply with FCC Part 15 Rules in the United States / with IC Radio Standards in Canada, the system must be professionally installed to ensure compliance with the Part 15 certification / IC certification. It is the responsibility of the operator and professional installer to ensure that only certified systems are deployed in the United States / Canada.